

SUMMARY.

- i. Imagines of *D. vinula*, *furcula*, *bifida*, *B. callunæ*, *lanestris*, *S. carpini*, *L. testudo*, and *H. prasinana* secrete from the mouth an alkaline fluid on emerging from the pupa.
- ii. The Dicranuran species wear a "shield" derived from the pupa case as they emerge, and remove it subsequently by their legs.
- iii. The strength of the solution in *D. vinula* is about 1.4 grammes of potassium hydroxide in every 100 c.c. of liquid.
- iv. The mesenteron of *D. vinula* develops an anterior dorsal diverticulum for storage of the alkali during pupal life.
- v. The palps of *D. furcula* and *bifida* are the boring tools used to open the cocoon.
- vi. In *B. callunæ*, *lanestris*, and *L. testudo*, the front of the head either of the pupa or imago is produced into a sharp boss for perforating the cocoon.
- vii. Small articulated (?) mandibles with muscle slips are present at the corners of the labrum of *H. prasinana*.

EXPLANATION OF PLATES VIII. and IX.

PLATE VIII.

- FIG. 1.—Dorsal view of alimentary canal of pupa of *D. vinula* the day after pupation: *æ*, œsophagus; *a r*, alkaline receptacle; *mes*, mesenteron; *r*, rectum.
- FIG. 2.—Alimentary canal of pupa one month after pupation: *æ*, œsophagus; *a r*, alkaline receptacle; *mes*, mesenteron; *r*, rectum.
- FIG. 2A.—Side view of anterior part of same, enlarged: *æ*, œsophagus; *a r*, alkaline receptacle; *mes*, mesenteron; *r*, rectum.
- FIG. 3.—Alimentary canal of freshly emerged imago: *d*, tube leading from body cavity to rectum; *æ*, œsophagus; *a r*, alkaline receptacle; *mes*, mesenteron; *r*, rectum.
- FIG. 3A.—Side view from another specimen, four days after emergence: *d*, tube leading from body cavity to rectum; *æ*, œsophagus; *a r*, alkaline receptacle; *mes*, mesenteron; *r*, rectum.
- FIG. 4.—Internal surface of "shield" of *D. furcula*: *æ p*, portion of pupal œsophagus; *hk*, hooks for securing "shield" to head of imago; *hk'*, small pair of hooks.
- FIG. 5.—Dorsal view of anterior part of head of imago of *D. furcula*: *a*, antlia; *p*, maxillary palp; *hkg*, groove for hooks (*hk*, in Fig. 4); *lp*, labral prongs as mere stumps.
- FIG. 6.—Ventral view of same: *hk'g*, depressed area in which small hooks of shield are lodged.
- FIG. 7.—Dorsal view of anterior part of head of imago of *D. bifida*: *a*, antlia; *p*, maxillary palp; *mn*, mandible remnant; *hkg*, groove for hooks.
- FIG. 8.—Dorsal view of head of pupa of *B. callunæ*.

PLATE IX.

- FIG. 9.—Dorsal view of part of head of imago of *B. callunæ* : *b*, pointed boss. Actual size 3·47 mm. by 2·17 mm. The corresponding portions of pupa and imago of *B. lanestris* are in all essentials similar to those of *B. callunæ*, differing only in being smaller.
- FIG. 10.—Same view of head of pupa of *L. testudo* : *b*, pointed boss, 0·21 mm. long, 0·40 mm. broad at base.
- FIG. 11.—Front view of head of pupa of *L. testudo* : *b*, pointed boss.
- FIG. 12.—Dorsal view of head of imago of *L. testudo* : *b*, blunt boss, 0·16 mm. long, 0·40 mm. broad at base.
- FIG. 13.—Dorsal view of anterior part of head of *H. presinana* : *a*, antlia ; *mf*, muscle (?) fibres ; *p*, maxillary palp ; *mn*, mandible.
- FIG. 14.—Ventral view of same ; *a*, antlia ; *p*, maxillary palp ; *s*, spike formed by rim of eye.
- FIG. 15.—Series of scales from palp, showing transition from ordinary form to hair-like form : *i*, from mid-dorsal surface of palp ; *ii* and *iii*, from edge and side respectively ; *iv*, from ventral surface.